THE ARMY MEDICAL MUSEUM.—A HISTORY.

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Washington, D. C.

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On the 10th of February, 1915, on motion of Dr. A. B. Hooe, I was requested by this Society to prepare and read a paper before it, on the subject of the "Army Medical Museum and Library." The compliment I appreciate very much, but so far as the Library is concerned, I must ask to be excused. The one to do that part is Dr. F. H. Garrison, who, as well as Drs. Billings and Huntington of the Army, had already written up the Library in a brief way.

With regard to the Museum I had long contemplated making a collation of the more interesting facts in regard to it, and had made some memoranda, intending that the work should be a permanent record for reference. I talked the matter over with the Curator, then Major E. R. Whitmore, of the Army Medical Corps, who approved it, and during the leisure of the summer and early fall I proceeded with the preparation. The results make a record of some size, and for the purpose of the talk this evening I have made a sort of summary.

I may state here that this day, Nov. 3, 1915, is just fifty years since I was assigned to duty at the Museum, Nov. 3, 1865. Through many administrations, many other persons have come and gone while I am still in the harness.

The credit for the inception of the Army Medical Museum seems to be due to Dr. Wm. A. Hammond, Surgeon General, U. S. Army. He was appointed Surgeon General April 25, 1862, and on May 21, less than one month after his appointment, he issued a circular to the medical officers of the army, in which he stated that it was the intention to establish such a Museum and directed them to send to his office specimens of morbid anatomy, medical and surgical, and projectiles and foreign bodies removed from wounds.

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* Read before the Medical Society November 3, 1915.

While it was possible and perhaps probable that the idea of such a museum should occur to other army medical officers, especially in view of the fact that there was a military medical museum at Netley in England, and another at Val-de-Grace in France, it still seems to be due to Dr. Hammond that the Museum was established; and the credit has almost without exception been given to him. The first Curator, Dr. J. H. Brinton, a Surgeon, U. S. Volunteers, distinctly gives Hammond the credit, and was in a position to know.

Dr. Brinton was appointed Curator June 4, 1862, just two weeks after the issuance of the circular named. On that date he was assigned to duty in the Surgeon General's Office and appointed Curator of the Museum; and a few days afterwards, June 9, he was designated to prepare the surgical part of the Medical and Surgical History of the War of 1861–5. At the same time Dr. J. J. Woodward, Asst. Surg., U. S. A., who had also been assigned to duty in the Surgeon General's Office, was designated to prepare the medical part of the same history.

It should be added that not only did these officers and their successors attend to the duties named, but they were called on from time to time to attend to many other duties besides those of the Museum and the preparation of the History of the War.

Already there was a nucleus of a museum in half a dozen specimens that had at odd times found their way to the Surgeon General's Office. Besides this it became known that some medical officers were preserving specimens for their own use. It may be that this fact had some influence in determining to establish the Museum.

Events moved rapidly. July 28 the Surgeon General sent a number of medical officers to some of the military hospitals to collect such specimens as had up to that time been preserved, and a few days later, August 1, he directed Brinton to make the collections and have them properly arranged. It seems probable that the Surgeon General had become satisfied that his order to send specimens to his office was being to some extent evaded, and that specimens, as previously stated, were being preserved for the personal use of some medical officers.

At this early period the collection, being small, was housed in rooms in the office of the Surgeon General, which was then located in the back and upper part of the old Riggs Bank Building, at the corner of 15th Street and President Place, northwest. [This building was later torn down and replaced by the present one.] Sometime afterwards these rooms were turned over to the medical Inspector General, and Drs. Brinton and Woodward and the specimens were transferred to a building on Pennsylvania Avenue, west of 17th, north side, numbered 180. The number is now 1719–21.

After the battle of Antietam in September, 1862, Dr. Brinton

was sent to Frederick, Md., to collect specimens; Dr. W. W. Keen of Philadelphia was then on duty at the hospital at Frederick, and aided in the collection.

In December, also, after the battle of Fredericksburg, Brinton, accompanied by Dr. Wm. Moss, Asst. Surg., U. S. Vols., and Assistant Curator of the Museum, went to Fredericksburg and collected many specimens.

By the first of January, 1863, in the few months that the collection had been made, it had reached a total of 1,349 specimens, and consisted of 985 surgical, 106 medical, 133 missiles and 125 miscellaneous. A catalogue had been compiled by Dr. Moss and was published. This publication, in which credit was given by name to the contributors, is said to have increased the interest in the Museum and stimulated contributions.

The first preparator was a man named Fred Schafhirt, who was born in Germany and was said to have served as preparator to the eminent surgeon, Langenbeck, and, according to Dr. Otis, also served Blumenbach, the distinguished German physiologist. Schafhirt came to the United States and became assistant to Professor Joseph Leidy, the eminent anatomist, for a long time Professor of Anatomy at the University of Pennsylvania. Dr. Otis also says that Schafhirt assisted Prof. George Morton, the author of the "Crania Americana." Schafhirt was assisted at the Museum by his two sons, Ernest and Adolph. Schafhirt was not a graduate in medicine but was generally called Doctor. His strong points consisted in the fact that he had had a long training in preparing specimens and had acquired much information about human and comparative anatomy. The fact that Brinton and Woodward and Hammond also were all from Philadelphia explains in part the selection of Schafhirt as preparator. He was a steady worker and, as testified by Woodward, his work was satisfactory.

The specimens as received at the Museum were but roughly prepared and needed further attention, which was given by the Schafhirts, and after being properly mounted, were labelled and the proper records made by the clerks detailed for the purpose. These clerks were at that time enlisted men, Hospital Stewards in the U. S. Army. The work of preparation was so great, due to the large number of specimens received in relatively a short time, that it could not possibly be thorough, and for a long time the bone specimens were troubled by insects, that fed on the remnant of the softer organic matter in the bones. The Museum shelves became untidy from accumulations of debris. The trouble was met by the generous use of camphor, which, as it volatilized in the cases, killed the insects. Still later the Persian insect powder was used. When the "rush" was over, and there was time to do the work more thoroughly, the trouble ceased.

The wet specimens were then and for a long time afterwards preserved in alcohol. This alcohol was distilled at the museum

from whiskey and other alcoholic liquors, that from time to time were seized by provost marshals and other army officers under circumstances that called for their condemnation. The liquors were usually turned over for storage to the medical purveyors, and much of the stuff was then sent to the Museum for the preservation of specimens. The strength of the alcohol used for preservation was about 70 per cent., a little higher for nerve tissues. It was a simple matter to change the fluid on specimens and recover the alcohol by redistillation. The museum was not compelled to buy alcohol for preserving specimens, for many years, the quantity of confiscated liquors was so large.

Other preservative liquids have from time to time been tried, but although the objections to alcohol were particularly that it decolorized and shrunk the specimens, it was altogether the most satisfactory preservative, and its use was continued until the formula of what is known as the "Kaiserling" process was published, after which the use of alcohol was almost entirely discontinued except as part of that process. With some modification, the Kaiserling process has been used with much satisfaction for wet specimens since June, 1897. Specimens prepared by this process were originally intended to be kept in the dark, but of course this would not answer for a museum.

May 21, 1863, Brinton was again ordered to go to the Army of the Potomac to collect specimens. By this time the collection had outgrown its accommodations, and Brinton looked about for some other and more suitable place. He found a place on H Street, Northwest, between 13th and 14th, north side, in a building occupied by a school, and generally known as the Corcoran schoolhouse, because it had been built by a Mr. W. W. Corcoran, a well known banker of Washington, who had at one time been associated with the Riggs bankers. May 22, the Secretary of War, E. M. Stanton, ordered that the building be turned over to the Medical Department of the army for the use of the Museum. The school, however, was permitted to finish its term; the building then was altered for Museum purposes, and in the following September the collection was transferred to it.

In the meantime, after the battle of Gettysburg, July 1 to 3, 1863, Brinton and Dr. Schafhirt went there to collect specimens and Schafhirt packed two barrels full and sent them to Washington. It may be mentioned that General Daniel E. Sickles was shot in the leg at Gettysburg; his leg was amputated and by his direction sent to the Museum, where the bones were prepared and mounted as number 1335 of the pathological series. From time to time for some years the General dropped in at the Museum to see his remains.

In August, 1863, a lot of specimens was received from the hospitals in Louisville, Ky., and during this month a number of boxes containing cans and with lock and key, were sent to hospitals for collections; the preservative furnished was whiskey.

The presence of the Museum collection and of many of the younger army medical officers in Washington, suggested to Brinton and others that it would be a good idea to establish an Army Medical School, utilizing the Museum collection for a series of lectures on military medicine and surgery, in the Museum building. Application for permission was made to the Surgeon General (who at this time was Dr. Joseph K. Barnes, also of Philadelphia, and designated as *Acting* Surgeon General, in place of Dr. Hammond). The application was referred to the Secretary of War, who disapproved it, and thus this first effort toward an Army Medical School came to nought. Among the medical officers who had offered their services for the school were Brinton, Woodward, Roberts Bartholow, D. W. Bliss, John A. Lidell and Wm. Thompson. The latter became a well known ophthalmologist in Philadelphia.

In December, 1863, a box of specimens was received from Vicksburg, Miss. Sometime in the winter of 1863–4 a Russian fleet came up the Potomac and anchored at Alexandria, Va., because of the insufficient depth of water at Washington. I remember the fleet. I was then stationed in Alexandria. One of the surgeons of the fleet visited the Museum and some time afterwards published an account of his visit. He was especially interested in the shot fractures, and spoke approvingly of the illustrations that were to be used in the History of the War; also of the microscopic slides and the Indian weapons; he doubted if the specimens preserved in alcohol would eventually prove valuable, because they would lose their color and other features.

About February, 1864, the collection of hospital records that contained the detailed histories of surgical cases, and the clerks working with them, were formed into a Division of Surgical Records, under the charge of Brinton. At this time also Dr. E. M. Curtis, Asst. Surg., U. S. A., was assisting Dr. Woodward in the microscopic work. Later Dr. Moss, the Assistant Curator, resigned and was succeeded by Dr. Brinton Stone. August 20 Dr. Hammond was dismissed from the Army. It is only just to him to state that many years afterwards he was restored to his former rank and retired with that rank. July 22 Dr. George A. Otis, Asst. Surg., U. S. Vols., was assigned to duty to assist Brinton, and Sept. 29 Brinton was relieved from duty in the Surgeon General's Office and as Curator of the Museum, and ordered to Louisville, Ky., for duty; and Otis took his place. About this time, also, Dr. Ralph Walsh, of Washington, was assigned to duty in the Museum.

In the latter part of the summer a photographic section had been added to the Museum. It was now desirable to rearrange the work and Otis was definitely placed in charge of the Surgical and Photographic sections and of the Division of Surgical Records, and to Woodward was given the charge of the Medical and

Microscopical sections and the Record and Pension Division ; this latter was composed of clerks and the records of hospitals, &c., used by the clerks in searching in the case of individual soldiers for evidence of disease or injury to establish, or not, claims for pension. At this time the Museum collection contained 3,500 specimens and about this time Woodward began to do photomicrographic work, assisted by Curtis.

In December, 1864, a series of specimens was selected to be forwarded to Paris for exhibition at the Paris Exposition of 1867.

By the end of the year a further subdivision of sections of the Museum was made ; to Dr. Otis' charge were added an Anatomical and a Miscellaneous section ; and to Woodward was added a section of Comparative Anatomy.

The photograph section, from the beginning, has been extensively utilized. One instance may be mentioned, namely, that after the assassination of President Lincoln, 1,500 photographs of those who were charged with conspiracy to assassinate were made by this section for the use of the Department of Justice. It may be added that in March, 1866, thieves broke in one night and stole about $500 worth of photographic apparatus and material. At the present time the section includes about 11,000 negatives besides nearly 1,400 photographs.

Nov. 3, 1865, I, who was then a hospital steward, U. S. A., was assigned to duty in the Museum as assistant to Woodward. Woodward had several other assistants, Dr. S. S. Bond of this city was one ; and two others besides Curtis were doing microscopic work, namely, Dr. J. C. W. Kennon and Dr. E. M. Schaeffer, then a hospital steward. With Dr. Otis was Dr. A. A. Woodhull, Asst. Surg., U. S. A., who was compiling a catalog of the Surgical Section, and also Dr. John Stearns.

The attachés of the Museum have made many post mortem examinations at the hospitals in Washington, and also outside the hospitals, for army medical officers and private physicians. The object has been to acquire specimens for the Museum collection, and it will be understood, therefore, that there has been little or no compensation for the work. In 1865–6 a series of 100 examinations was made at the Freedmen's Hospital, Washington, by Stewards Adolph Schafhirt and Bond and myself. After an interval of several years I resumed this work at the hospital and continued it until a few years since, when the hospital was provided with a pathologist. In all, up to date, the attachés made about 1,500 examinations, over 1,300 of which have been recorded in detail. Some of these have been made on persons of greater or less celebrity or notoriety, as the case may be ; for instance, on President Lincoln and his assassin, Booth ; on President Garfield and his assassin, Guiteau ; on Vice Presidents Henry Wilson and George Clinton. And I may add that at Freedmen's Hospital I examined George Washington, Patrick Henry and Daniel Webster.

It is only fair to say that on many occasions, especially before the days of antiseptic surgery, infection was acquired as well as specimens, and attended with more or less serious illness and with more or less troublesome sequelae. I have been through a number of illnesses of major or minor seriousness. It is not, therefore, a matter of surprise that an infection from one case, in which cultures showed the presence of both the meningococcus intracellularis and diphtheria bacillus, put me to bed and was followed by a persistent partial deafness.

In the *Atlantic Monthly*, July, 1866, appeared an article by Dr. S. Weir Mitchell, entitled "The case of George Dedlow," purporting to be an account of an army officer who had been shot so that it became necessary to amputate in both arms and both thighs; it was said that the amputated legs had been deposited in the Museum, numbered 3486 and 3487. The story was a fiction, but was based on a case which Mitchell had read of. However, there was no case of quadruple amputation reported during the war; after the war a case was reported following frostbite.

After the assassination of President Lincoln, the place of the tragedy, Ford's Theater, located on Tenth Street, Northwest, between E and F, east side, and then numbered 454, was closed by order of the Secretary of War. Congress appropriated money to buy it and alter it for Museum purposes. When the alterations were completed, late in the year 1866, the Museum collection was removed thereto. The Division of Surgical Records and Record and Pension Division were also installed there, and both the building at 180 Pennsylvania Avenue and that on H Street between 13th and 14th were vacated. The latter was occupied at once by the National Medical College; the building was later torn down and the present one erected. The chemical laboratory of the Surgeon General's Office was also established in the new quarters on Tenth Street. These new quarters, besides the main building, had both a northern and southern annex; the chemical laboratory occupied the first floor of the latter; the upper floors were occupied by Woodward and Otis. The Record and Pension Division was on the first floor of the main building, the Division of Surgical Records on the second, where also were several small rooms used by Woodward for the pathological and microscopical work and later for microphotographic work. On the third floor was the Museum collection. In the north annex, which was at the back on an alley, were the photographic rooms and those used by the Schafhirts for their work. Some distance away from the main building in the alley was a two-story building, formerly a stable, and bought from Dr. A. Y. P. Garnett of this city, which was used by the carpenter, and for redistilling alcohol. Although the main building was considered fireproof, the annexes were not, and the roof was not; besides which, on the south side especially,

were sheds belonging to houses on E Street, which were a continual menace, and at length, January 1, 1875, one caught fire and the fire extended to the Museum, doing, however, little damage; it was extinguished almost entirely by Museum employees who happened to be present, although it was New Year's day.

It is an interesting reminiscence to me that the part of the Museum assigned to and occupied by me for the next twenty-one years, was a part where had been the box in which President Lincoln was assassinated.

The catalog of the surgical section of the Museum, prepared by Dr. Woodhull, was published this year, and the next year two more catalogs were published; the medical section prepared by Woodward and the microscopical by Curtis.

From time to time the Surgeon General issued circulars in regard to medical officers sending specimens to the Museum. This action seemed necessary to keep the matter in mind. One was issued April 4, 1867, in which specimens of Indian archaeology especially were requested. In January, 1868, Otis made his initial effort towards acquiring Indian crania and continued the effort until a large number of them were added to the collection. He also arranged with the Smithsonian Institution to exchange the specimens of Indian archaeology except crania for the crania that the Smithsonian had received. In this way the two museums tried to avoid duplicating subjects. Eventually, however, the entire collection of Indian crania, several thousand in all, was transferred to the U. S. National Museum. In the meantime Otis prepared a check list of the crania, which was published in 1876, and republished in 1880.

Dr. Otis also in 1868 began a collection of specimens of diseases and injuries of the lower animals. Eventually, however, when the Department of Agriculture established a bureau for the study of these diseases and injuries, the Museum ceased its activity in this direction, though still receiving such specimens as were contributed.

From time to time the Museum has purchased specimens, more particularly anatomical models. It has also bought some specimens in series, mainly pathological, notably what was known as the "Gibson" collection, made mainly by Prof. Wm. Gibson, while Professor of Surgery at the University of Pennsylvania; it comprised 529 specimens; bought by the Museum in May, 1868. In 1886 the Museum bought the collection left by Prof. Frank Hamilton, of New York City, consisting of 150 specimens. It also bought a series of models of dissections made in cathcartine, in Edinboro, at the University; cathcartine is a mixture of glue and glycerine, and the formula was devised by Mr. Cathcart.

Of the specimens in series that were *contributed* may be mentioned especially the plaster casts of the skulls of the old Peruvians, showing trephining, part of the Muniz collection; bones from

Indian burial places, from Clarence Moore; Chinese medicines; four series of plaster casts of dentures, respectively from Drs. V. H. Jackson and Samuel Sexton, of New York City, Dr. E. S. Talbot, of Chicago, and the American Society of Orthodontists. Also a series of wax models from Dr. D. H. Goodwillie, of Hoboken, N. J.; a series of transparencies showing the anatomy of the face, from Dr. H. M. Cryer, of Philadelphia; and many series of photographs.

Omitting the series of specimens just mentioned, and omitting also those specimens acquired by the attachés of the Museum, the largest number from any institution was 1582 from the Smithsonian Institution, many if not most of which were afterwards retransferred to the U. S. National Museum. The next largest number was 238 from Dr. Wm. Thomson, already mentioned. He was then, during the Civil War, in an army hospital in Washington. Next to him was 205 specimens from Dr. Edwin Bentley, also of the army, and in charge of military hospitals in Alexandria, Va. Then the numbers scale down. The largest number from any one person was from myself.

It may be mentioned that the 25 specimens from Dr. S. N. Burnett, of this city, were mainly eyes that he had extirpated; the 37 from Dr. H. C. Yarrow, of this city, were mainly Indian crania; the 48 from Dr. C. B. Robinson, of this city, were from his veterinary hospital; the 39 from Dr. S. S. Adams and the 67 from Dr. G. N. Acker, of this city, were mainly from the Children's Hospital; the 86 from Dr. Paul F. Eve, of Nashville, Tenn., were urinary calculi; the 83 from Dr. L. A. LaGarde, of the army, were mainly from experimental shot fracture, done at the Frankford Arsenal; the 70 from J. F. Hartigan, of this city, were mainly acquired by him in making post mortem examinations for the coroner.

The specimens contributed by army medical officers during the Civil War, were mainly surgical. In many cases the specimens were credited to the officer in charge of the hospital, whether he had anything really to do with them or not, instead of to his subordinate.

During the period in which Dr. Woodward was connected with the Museum he gave lantern exhibitions from time to time in the lower room of the Ford's Theater building, which on such occasions was prepared for the purpose. These exhibitions were given mainly to members of Congress, the American Medical Association and the National Academy of Sciences. The object, of course, was to acquaint these bodies with the work of the Museum and secure their approval and support.

In February, 1869, the French Government was so desirous of securing information in regard to the American Indian that it employed an artist to make copies of some of the Indian crania.

In June, 1869, Dr. Curtis was detailed to photograph the eclipse of the sun, and went to Des Moines, Iowa, for the purpose. The work was done in coöperation with a detail from the Navy Department that was sent to take observations.

At the meeting of the National Academy of Sciences in 1870 Dr. Otis read a paper on Deformation of skulls, and one also on Indian crania, that were based mainly on work done at the Museum.

Occasionally a meeting has been held at the Museum in memory of some distinguished person, deceased; as in the case of Professor Baird, of the Smithsonian Institution, and of Sir James Y. Simpson, who first used chloroform as an anesthetic.

Among the earlier favorable notices of the Museum may be mentioned those of Berenger-Féraud and St. George Mivart in 1870; the former, in a French journal, said that the United States had done as much in the period of the Civil War as all Europe had done in a century, and that the Museum contained more specimens than all the anatomico-pathological museums of Europe combined. Mivart said that few nations would have so utilized the results of a protracted civil war as to make them available in after years for the advancement of medical science and the alleviation of human pain as the United States had done.

In the March number of *Lippincott's Magazine*, 1871, Woodward published some account of the Museum.

In 1871 the subject of vegetable germs as causative of disease was much discussed, and brought from Woodward a published statement that his own microscopic examinations of air supposed to be infected had failed to demonstrate the presence of any such germs. At that time he may not have known of the researches of Leewenhoek in 1700; of Mueller in 1786, and of Ehrenberg in 1838; but he knew of the work of Pasteur. The discovery of the anthrax bacillus by Koch occurred five years after Woodward had expressed his skepticism.

From time to time some one from abroad came to the United States especially to see the Museum and its work. I recall Victor Horsley, Pearce Gould, and Erichsen, of London. Erichsen came in 1874, and on his return said some very complimentary things about the Museum. He said that the Museum collection illustrated every variety of gunshot and arrow wounds and also those diseases that are more fatal than the bullet to an army in the camp or field. He spoke of the beautifully illustrated histories of the war, and in some detail analyzed the Museum catalogs.

The Museum was well represented at the Centennial Exposition in Philadelphia in 1876. Woodward was in charge of the representation of the Medical Department of the Army, which, of course, included the Museum, and he exerted himself to the utmost, as did also Dr. H. C. Yarrow, who was custodian of this

part of the exhibit. Both were Philadelphians by birth and therefore had a local pride in the success of the Exposition. Woodward read a paper on Typho-malarial fever, a name that he had given to a common form of camp fever, of which there were specimens in the Museum collection.

In October, 1878, specimens were received at the Museum purporting to be from cases diagnosed as Rocky Mountain fever; these specimens showed clearly the lesions of ordinary typhoid fever.

In May, 1879, there was received from New Orleans a unique specimen, showing the successful ligation of the innominate artery, in a case of subclavian aneurysm; the patient lived afterwards eleven years. The operator was a Dr. Smyth, of New Orleans.

Oct. 18, 1880, Dr. Fred Schafhirt died, and February 23, 1881, Dr. Otis died. Dr. D. L. Huntington, of the army, became curator.

By the death of Dr. Schafhirt the work in Comparative Anatomy almost entirely ceased, and eventually the greater part of the collection was either transferred to the National Museum or donated to colleges and schools for teaching purposes. In the meantime Dr. R. W. Shufeldt, of the army, went thoroughly over the collection, renovated it, and made a report thereon, which, however, was never published.

The year 1881 is memorable for the assassination of President Garfield. Taking place, as it did, in this city, explains the fact that Surgeon General J. K. Barnes, Dr. Woodward and, finally, myself were brought into the case. It is not necessary to go more into detail; the entire history of the case was published and commented on both in this country and abroad. The Museum contains the two specimens, the fractured vertebrae and the traumatic aneurysm of the splenic artery. Again, in June, 1882, the execution of the assassin Guiteau secured to the Museum his enlarged spleen and his skeleton; his brain was parcelled out among many alienists; what little is left I still have. For a long time I had also a small porcelain plate showing a deposit of arsenic, from the test made by Dr. W. C. Tilden, at one time in the chemical laboratory of the Surgeon General's Office. The arsenic had been placed on a bouquet of flowers sent to Guiteau on the eve of his execution. For the microscopical examination of the brain of Guiteau Dr. J. C. McConnell of the Museum prepared the slides that were examined by the other members of the committee, Drs. E. O. Shakspeare and J. W. S. Arnold. I might add that Guiteau's body was macerated by another attaché of the Museum, Ernest Schafhirt, who made a special preparation of the face, which I have been told was afterwards placed in an anatomical museum in New York City.

April 5, 1883, Surgeon General Barnes died; and October 10,

his successor, General C. H. Crane, also died. Woodward had become an inmate of a private insane asylum, where he later committed suicide.

December 28, 1883, the Museum and Library were placed under one officer, and Dr. J. S. Billings of the army was given charge. As a result of his appointment quite an impetus was given to the Museum work. He had been in charge of the Library about 15 years. Of course we all know that whatever Dr. Billings was connected with had to move, and rapidly. He expected a day's work to be done in a few hours, and a week's work in a day. He worked that way himself. He at once secured another anatomist, Dr. J. L. Wortman. Dr. Washington Matthews of the army was assigned to duty at the Museum, especially to study the Indian crania. Later Billings also secured Dr. W. M. Gray as microscopist and bacteriologist. All these men were very efficient.

Dr. Billings inaugurated several new features in the Museum work. With the assistance of Dr. Matthews he devised a new classification of specimens. He sent out circulars soliciting specimens, stating in much detail just what he wanted. With the assistance of Dr. Wm. Lee of this city he began a collection of medical medals, which now is quite large; most of them are exhibited in swinging frames. He began also a collection of microscopes, that may now be said to be historical; it is unsurpassed if indeed equalled elsewhere in this country. He had Dr. Gray make serial sections of fetuses and stain them; they were then mounted in swinging frames. Dr. Gray also made a series of transparencies of bacteria, parasites and morbid anatomy; these are either in swinging frames or in the windows. Dr. Billings enlarged the collection of specimens of embryology, both wet specimens and models. He began to enlarge the dental collection, that previously had had scant attention. He had Wortman make frozen sections and bought a series of dissections at the University of Dublin. Dr. E. M. Hodge, who succeeded Wortman as anatomist, made a series of sections of bone.

In 1880 the Surgeon General had recommended a new building for the Museum and Library and repeated the recommendation each successive year until finally Congress, in 1885, appropriated the money. This is the building now occupied by the Museum and Library. It also houses a part of the Record and Pension Division of the War Department, and several minor sections, including the chemical laboratory. It was finished and occupied in 1888.

The Hemenway Southwestern Archaeological Expedition that was financed by Mrs. Hemenway, of Boston, Mass., and was under the direction of Frank Cushing, the archaeologist, gave the Museum the opportunity to acquire a large number of skeletons and parts of skeletons of the sedentary Indians of the

southwest, mainly prehistoric. In 1887 Drs. Matthews and Wortman went to Arizona and began the collection which, after completion, was studied by Billings, Matthews, Wortman and myself and the results published.

I have mentioned that the Museum was represented by specimens at the Exposition in Philadelphia. I may add that it has also been represented at nearly all the subsequent Expositions, sometimes to a greater extent than others; at New Orleans, at Buffalo, at St. Louis, at Chicago, at Omaha, at Madrid. It has also been represented at a number of the meetings of the American Medical Association as well as of other bodies.

September 20, 1888, a reception was given to the Congress of American Physicians and Surgeons at the new Museum building, where Dr. Billings read a paper on museums in general, and the Army Medical Museum in particular. The paper was published.

After the close of the Chicago Exposition Dr. Walter Reed, of the army, who had been on duty there with Dr. LaGarde, of the army, was ordered for duty to the Museum and was appointed curator; Dr. James Carroll came with him. It had been decided to inaugurate an Army Medical School. The school occupied a large part of the third floor and a part also of the first floor of the Museum building. It crowded the Museum and Library somewhat until, in 1910, it was removed to its present quarters at 721 13th Street, N. W.

In 1895 Dr. Billings, having been given charge of the fusion of three large libraries in New York City—the Astor, Tilden and Lenox—was retired from service in the army and, of course, severed his connection with the Museum. He was succeeded by Dr. Huntington.

About this time the attention of Congress was called to charges of cruel vivisection in institutions in this city, including the Museum. The charge was inquired into but was not substantiated.

March 17, 1897, an article by Dr. Huntington on the Museum and Library appeared in the *National Medical Review*, published in this city.

In 1898 Dr. Huntington was succeeded by Dr. Dallas Bache, also an army officer. Every few years from this time another army medical officer was placed in charge of the Museum and library. The personnel of the curator and librarian changed more rarely.

The same year an article on the Museum appeared in *Godey's Lady's Magazine*, by a Mrs. J. N. Kyle.

The war with Spain brought but few specimens to the Museum, and most of those that came were from Dr. Rupert Norton, who had been a practitioner in this city, and afterwards was superintendent of the Johns Hopkins Hospital. Dr. Gray served for some time on board the hospital ship "Relief," doing x-ray

work. Dr. Reed, in conjunction with Drs. Shakspeare, of Philadelphia, and Vaughan, of Ann Arbor, served on a board of inquiry into the prevalence of typhoid fever during the war. Afterwards Dr. Reed, with Dr. Carroll and others, served on a board of inquiry into the subject of yellow fever. The results were published. Much if not most of the work of preparation for publication was done at the Museum, and the chief clerk of the Museum, Mr. C. J. Myers, was especially complimented by Dr. Reed for his services.

In 1899 Dr. Hodge went to Manila in the Phillipines to collect specimens for the Museum—specimens illustrative more especially of tropical diseases.

April 23, 1900, Dr. A. A. Woodhull of the army succeeded Dr. Bache in charge of the Museum and Library. April 23, 1901, Dr. Calvin DeWitt, of the army, succeeded Woodhull.

September 19, 1902, Dr. W. E. Mew, the chemist of the Surgeon General's office died; he was succeeded by Dr. Hodge. This made a vacancy in the position of Anatomist, which was filled by the appointment of Dr. J. C. McConnell.

November 13, 1902, Dr. Reed died. He was succeeded as Curator by Dr. James Carroll. Dr. Carroll died September 16, 1907, and was succeeded as Curator by Dr. F. F. Russell, of the army.

In the meantime, July 20, 1903, Dr. DeWitt was succeeded by Dr. Charles Heizmann, of the army, in charge of the Museum and Library, and in 1905 Dr. Valery Havard succeeded Dr. Heizmann. Dr. McConnell died July 25, 1904, and was succeeded December 21, by Dr. D. J. Healy. Mr. Myers, the chief clerk, died March 22, 1905. Dr. Healy resigned in 1907, and was succeeded by Dr. J. S. Neate.

Dr. Carroll and Dr. Healy had begun a new classification of the Museum collection, following closely that of the Pathological Laboratory of McGill University, Montreal, Canada. After the death of Carroll and resignation of Healy, the classification was abandoned.

Dr. Havard was succeeded in December, 1909, by Dr. L. A. LaGarde, of the army. June 4, 1910, Dr. LaGarde was succeeded by Dr. Walter D. McCaw, of the army, who had been Librarian since October 3, 1903, following Dr. Merrill.

Dr. Gray died March 9, 1910; Dr. Neate then became Microscopist and Bacteriologist, and Dr. S. S. Hindman was appointed Anatomist February 20, 1911; he resigned July 28, and, March 19, 1912, Dr. Ralph M. LeComte was appointed Anatomist. April 28, Dr. Neate died and LeComte became Microscopist and Bacteriologist. Dr. J. R. Scott was appointed Anatomist, July 6. September 2, 1913, LeComte resigned to enter the Medical Reserve Corps of the army, and, October 7, was succeeded by Dr. Scott. Dr. Arthur Eisenberg was appointed Anatomist.

Dr. McCaw was relieved August 8, 1913, by Dr. C. C. McCulloch, of the army. Dr. Russell was succeeded as Curator by Dr. Eugene R. Whitmore, who, in turn, was himself succeeded, in 1915, by Dr. McCulloch. At present, therefore, Colonel McCulloch is in charge of both Museum and Library.

After the death of Dr. Carroll and resignation of Dr. Healy I was made Custodian in addition to Pathologist of the Museum, and directed to make such arrangement of specimens as seemed to me best.

The number of specimens in the Museum June 30, 1915, was 46,995, comprising 13,038 pathological, 1,205 anatomical, 624 comparative anatomy, 12,916 microscopical, 3,975 miscellaneous, 293 provisional anatomy, photographs 4,000 and negatives about 11,000. About 8,000 specimens have been donated to or exchanged with other institutions or persons, and about 3,500 have had to be discarded for one reason or another.

Perhaps the most interesting collection in the Museum is that of shot fractures of bones, nearly all of them from the time of the Civil War, most of them acute conditions, but many are sequelae, especially osteomyelitis. The missiles used were at first a round bullet or buckshot, later the rifle or miniè bullet, with cannon ball and shell. Besides the shot wounds there are wounds by swords, sabers, arrows, tomahawks and bayonets; but bayonet wounds were rare.

There are also many fractures from falls, blows and other accidents; many in which the cause is not stated.

Of the *wet* specimens, as they are called, the most interesting are those from infectious diseases—typhoid fever, tuberculosis, yellow fever, pneumonia, smallpox, epidemic cholera, leprosy, the plague, dysentery, diphtheria, pellagra, glanders and farcy, cerebro-spinal meningitis, &c.

There are specimens of embryology, both wet specimens and models. Malformations and monstrosities, human and comparative, including also ectopic gestation. Animal and vegetable parasites; here may be mentioned the fungus foot of India. The hospital gangrene of the Civil War; we do not see it now. Syphilis, calculi, renal, vesical and biliary.

There are many models, some in papier machè, others in plaster of paris, wax and cathcartine. The Baretta models, made by Baretta in Paris, the ingredients of which are kept secret, show normal and morbid anatomy.

There is a large collection of bones, termed precolumbian and prehistoric. Also a large collection of specimens, illustrating dental anatomy, human and comparative, dental pathology and therapeutics.

A large series of transparencies showing especially the various forms of bacteria and protozoa; also photographs of the same.

A large collection of instruments; a series of microscopes,

historical; also microscope accessories; anthropometrical apparatus. Clinical thermometers, stethoscopes, ophthalmoscopes, sphygmomanometers, instruments for vaccination and hypodermic syringes, all historical; besides instruments generally. Also facsimiles of the instruments found at Pompeii.

Military medical chests and pouches of different nations; ambulances and litters also of different nations; missiles and weapons of different nations.

A series of Buchhold preparations of parasites and morbid anatomy in capsules. A series of rachitic pelves.

Sections of bone showing internal structure. Casts of skulls, racial. A series of frozen sections and dissections.

A miscellaneous series, including, among other specimens, a plaster cast of the left humerus of the African explorer Livingstone, showing healed fracture; model of the brain of the deaf, dumb and blind Laura Bridgman; the injured parts in the case of John Wilkes Booth; the fractured bones of the leg of General Sickles; the bones and enlarged spleen of Guiteau, the assassin of Garfield, and many other interesting specimens.

The Museum has been a great educator in anatomy and pathology. It is open to the public and is visited every year by thousands of persons, who carry away with them more or less valuable information, and no doubt impart it to others. Physicians and students consult the individual specimens; specimens almost without number have been shown to this Society; specimens without number have been sent to meetings of many other scientific bodies; many specimens have been used as the basis of illustrations in many publications, both in this country and abroad. The Museum laboratories have, through their microscopical and bacteriological work, given a mass of information to both military surgeons and civil practitioners.

Besides all this, there is a sentimental side. The old soldier of the Civil War, or his children or children's children, still visit the Museum, to look upon the fractured bone or amputated limb, pathetic token of his part in the great fight for the Union. So in more ways than one it may be said that the wisdom of Dr. Hammond in founding the Museum in 1862, 53 years ago, seems fully justified.

Dr. F. H. Garrison, of the Library of the Surgeon General's Office, said that the Medical Society as well as Dr. Lamb was to be congratulated upon the presentation of this exhaustive and valuable paper, which no one but its author could have written. It presupposed a life long acquaintance with the official records and a memory of events that went back to the Civil War. Any one familiar with the nature of public records would realize that it needed close knowledge of these to get anything of value out of them, and it was probable that no later official could deal with this part of the subject so well. For a long time Dr. Lamb had

been practically the Curator of the Army Medical Museum and many of its specimens, as in the collection of John Hunter in London, or Virchow in Berlin, were prepared with his own hands. It might be of advantage to the Museum if Dr. Lamb's list of *desiderata* were printed in the ANNALS of the Society. The gaps in the Washington collection, as was originally the case in the Hunter Museum, are mainly in the physiological series and the corresponding pathological series, and it is possible that some practitioners or surgeons of the District of Columbia might be able to help out with a specimen here and there.

The Surgeon General's Library, in the Army Medical Museum building, began as a small collection of medical books in the office of Surgeon General Lovell, 1835; numbering about 135 works, (228 volumes), in 1840, and increased to about 587 volumes by Surgeon General Hammond in 1862. Dr. Billings came on at the beginning of 1865 in Surgeon General Barnes' administration, and at this time the collection numbered 1,365 volumes. Soon afterwards General Barnes acquired the use of $80,000.00 for the purchase of books—a slush fund turned in from the dismantled army hospitals—and by 1871 the Library contained 13,330 volumes. Appropriations for further purchases were obtained from Congress, and catalogs were printed, that of 1873 showing 25,000 volumes and 15,000 pamphlets. In 1876 Dr. Billings published his *Specimen Fasciculus* of an index catalog (by authors and subjects), which was well received by the medical profession. Soon afterwards he secured the valuable aid of Dr. Robert Fletcher. In 1880 Volume I of the Index Catalogue was printed, and has been followed by a volume each successive year, the whole first and second series, to be completed in 1916, making 37 volumes in quarto. The Surgeon General's Library has the best collection of medical periodicals in the world, and this periodical literature, the most important part of modern medicine, is well indexed in the catalogue. The only things lacking are certain rare and expensive transactions of societies, but even the medical papers in these are often indexed in the form of abstracts, printed in other journals. Physicians would have better success in finding things under the subject entered in the catalog if they minded the cross references. An article on "Pneumopericardium" for instance might not be found under this heading, but would appear under the referred subject "Pericardium, (air in)".

Dr. E. M. Schaeffer had heard with much interest the review of the history of the old Army Museum, which brought back to his memory many scenes and faces of former days. The mention of the photographic division reproducing the picture of John Wilkes Booth for distribution to aid in his capture after the death of President Lincoln in April, 1865, reminded Dr. Schaeffer that

one of his first duties when assigned to the Museum as a hospital steward of the Army was to mount on cardboard several hundred of these copies which had been made by Dr. Edward Curtis. Not long after this Dr. Woodward received a message from the War Department directing him to take his post mortem case and repair to the Arsenal. When he returned to the Museum he said that he had made an autopsy on Booth, whom he would have recognized from the photographs, although the face was much freckled and tanned by exposure to the sun. Dr. Woodward brought with him the cervical vertebrae and spinal cord showing the track of the bullet that had killed Booth; after further examination these were properly prepared and placed in the Museum. The specimens had been wrapped in stout brown paper. At that time there was a rage for relics and souvenirs of all kinds, and, influenced by this feeling, Dr. Schaeffer cut off and preserved, duly labelled, a portion of the blood-stained paper as a somewhat ghastly souvenir of the tragedy. He placed it in his cabinet and had forgotten it when about fifteen years afterwards, in searching for some specimen of dried human blood to illustrate to his private class in microscopical technique, he remembered the paper and submitting it to the proper treatment by macerating and teasing with needles to bring out any structure that might remain, much to his pleasure and rather to his surprise, the red corpuscles were seen with a vivid distinctness, often sought in vain in more recent cases.

Among other reminiscences, he recalled the epidemic that visited the city some forty odd years ago among the horses. Probably *epihippic* would be etymologically the more correct term. He was sent ffom the Museum to test the air for germs, in the large stables of the Washington and Georgetown car line. The air was collected by Pouchet's apparatus, then in use, and the collected dust was examined microscopically at the Museum. The conditions in the stables, where hundreds of sick and dying horses lay, some swollen out of all resemblance to the normal animal, and many with pus streaming from their nostrils, was something "fierce." Business was for a time prostrated. He remembered going to the Museum one morning and meeting the late Dr. James E. Morgan, for many years a prominent member of our Society, going his daily rounds in a "horseless" buggy with two stalwart hostlers between the shafts where the horses were wont to work.

One of Dr. Schaeffer's most pleasing duties was to show around the Museum and especially in the microscopical section, medical officers from all parts of the world, on a visit to our capital. Dr. Fu-kui, a very intelligent Japanese, came every day for several weeks to study the microscopical technological work of the Museum, although Dr. Schaeffer's somewhat limited command of Japanese, and the interpreter's difficulty in finding Japanese synonyms for many of the terms, rendered progress rather slow.

On one occasion when it was desired to repeat an experiment for verification or contradiction, in which a pathologist from Philadelphia had swallowed two ounces of a fluid mixture of raw beef infusion in a highly decomposed condition, after which his blood was said to show many living microbes when examined microscopically. One very hot day Dr. Schaeffer prepared the solution, and when all was ready for the experiment, the question arose as to who should take this highly malodorous repulsive concoction, a veritable "hell broth." At length Dr. Schaeffer offered himself and succeeded in swallowing, and what was more difficult, in retaining the entire dose. His blood, examined at intervals by the officers, failed to show the slightest abnormal appearance, and the Museum triumphantly disproved a new and startling discovery, certainly in one instance.

Dr. Schaeffer apologized to the Society for the length of his remarks and said that when he began to think of the old times he insensibly went beyond the usual limits.

Dr. Edwin R. Hodge said that Dr. Lamb had so completely covered the ground that little or nothing remained to be added except, perhaps, some unimportant minutiae. However, it occurred to Dr. Hodge that there was a matter upon which too much emphasis could not be laid. It was a work that stood out so preëminently among the brilliant achievements in American medicine, and had led to such momentous results for the public welfare, that it should be fully recognized that, apart from certain observations and experiments made in Cuba during the prevalence of yellow fever, the long and painstaking investigations of Major Walter Reed and his confrères of the Army Medical Board as to the causes of yellow fever, were actually carried forward and completed in the laboratories of this very Army Medical Museum building. Likewise, in the same institution was the work done that resulted in the published report showing the relation of the house-fly to the spread of typhoid fever, as well as that later carried out by Major Frederick F. Russell which has accomplished the complete immunization of the United States army from that dreaded scourge.

Dr. Kober could not refrain from expressing his very deep appreciation of Dr. Lamb's history of the Army Medical Museum and its remarkable activities. His contribution was worthy of his masterly but modest mind; its interest was enhanced by the fact that Dr. Kober himself had had the pleasure of personally knowing all the men whose names brighten the annals of that institution, except Drs. Brinton and Curtis, among the pioneer workers of the days of the Civil War. Dr. Kober had personally known Dr. Lamb since 1871, and did not hesitate to declare that of all those who had been mentioned by the historian, none deserved more credit or more public appreciation for what the Museum had become than our esteemed friend and fellow member, Dr. Lamb.

All the members of the Society were familiar with the painstaking and scientific methods of collecting and analyzing a vast amount of pathological material, and the Museum spoke for this. Dr. Lamb had not only been the largest individual contributor to the Museum but the Medical Society had also had the benefit of his presentation of specimens, case histories and pathological findings collected by him. Hence we were justly proud of his achievements in behalf of science and felt duly grateful for the instruction received from him. While listening to his paper Dr. Kober thought of the beautiful tribute paid by the great pathologist Virchow to the work of the U. S. Army Medical Corps, and it might not be amiss to reproduce in part at least the judgment of that competent, and certainly not overindulgent, critic on the publications of the Museum catalogs and the Medical and Surgical History of the War. "That the French in the Crimea learned from their experience little or nothing, and the Americans in their Civil War so much; that from this time dates a new era in military medical science; these results were brought about not by the magnitude of the need which the Americans had to suffer, for this was not greater than that experienced by the French in the Crimea, but rather by the critical and truly scientific spirit, the open mind, the healthy and practical understanding, which in America gradually permeated all the departments of the army organization, and which under the wonderful coöperation of an entire people, reached the highest point in humane efforts in a great war. Whoever takes up and reads the extensive publications of the medical staff of the United States will be constantly astonished at the wealth of experience therein found. The greatest exactness in detail, careful statistics and a scholarly statement embracing all sides of medical experience, are there united in order to preserve and transmit to contemporaries and posterity, in the greatest possible completeness, the knowledge bought at so vast an expense."

Dr. Kober said that it was fitting that the Society should honor Dr. Lamb on the occasion and moved a vote of thanks and congratulations on his fifty years of service in the Army Medical Museum, united with the fervent hope that he might enjoy many years of usefulness in the cause of science and medical education. [The resolution was adopted by a rising vote.]